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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,512	01/18/2002	Troy W. Francisco	H0002067 USA (4030)	1624

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Colleen D. Szuch, Esq;
Honeywell Law Dept. Honeywell International, Inc.
101 ColumbiaRoad, Building Meyer 5
Morristown, NJ 07962

EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,512

Applicant(s)

FRANCISCO ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 14, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 4, 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 11-12, 14, 18-19 are allowed.

Claims 4, 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest the use of an infrared analyzer equipped with a diamond-tipped probe to determine the concentration of free and bound water in an acid stream.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-10, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/35187.

WO discloses a process for continuous production of hydrogen fluoride comprises (1) a step of reacting starting fluorspar with starting sulfuric acid, (2) a step of separating a crude reaction product as obtained in step (1) into (a) a low-boiling mixture composed predominantly of hydrogen

fluoride and (b) a high-boiling mixture composed predominantly of unreacted sulfuric acid and containing small proportions of hydrogen fluoride and water, (3) a step of purifying and isolating hydrogen fluoride from said low-boiling mixture (a), (4) a step of adding sulfuric anhydride to said high-boiling mixture (b) in a substantially equivalent amount with respect to the water to convert substantially all the water to sulfuric acid and returning it together with said unreacted sulfuric acid as sulfuric acid feed to said step (1), and (5) a step of adding sulfuric acid in a supplemental amount to provide the amount of sulfuric acid needed for reaction with starting fluorspar, wherein, in said step (4), the amount of water occurring in said high-boiling mixture (b) is determined by the method of the invention for determining the component concentration, particularly the concentration of water, of a ternary mixture (note page 4, lines 6-page 6, 31 and page 7, second full paragraph).

The process for determining the concentration of water is described in WO '187 as a method of determining the concentration of each component of a ternary mixture essentially consisting of sulfuric acid, hydrogen fluoride, and water, which comprises measuring at least one set of the three physical quantities, namely (1) temperature, (2) ultrasound propagation velocity, and (3) electrical conductivity or viscosity, of the ternary mixture and converting measured values to the concentrations of the respective components according to calibration curves representing the relationships of the concentrations of respective components of a ternary mixture composed of sulfuric acid, hydrogen

fluoride, and water with the above-mentioned three physical quantities as separately constructed beforehand (note paragraph bridging pages 6-7).

WO '187 further discloses that the use of a computer is desired in order to conduct the treatment accurately and fast (note first paragraph on page 14).

The difference is WO '187 does not specifically disclose the use of a probe in at least a portion of the feed stream.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use any known means in the art to performed the functions required in WO '187 in order to accurately estimate the amount of water, without a showing of criticality or unexpected results, the use such probe is not seen as a patentable difference since the probe is a known and commercially available means in the art.

Applicant's arguments filed August 13, 2003 have been fully considered but they are not persuasive.

Applicants argue that WO '187 fails to teach or suggest a method of regulating water content including the step of estimating the amount of bound and free water in a stream. This is fundamentally different that a method which measures just the total concentration of water in the stream.

It appears that in there are only two types of water in a mixture, bound (i.e., chemically bound) and free water. Therefore, there is no difference seen between the claimed "bound and free water" and the total concentration of water as disclosed in the

applied reference. In the event that there is a difference, it should be noted that Applicants' claim 1 only require to "estimate", thus, the total concentration of water in the applied reference is a good estimate for the "bound and free water".

Applicants argue that WO '187 fails to teach or suggest any method for regulating and measuring water in a stream comprising sulfuric acid, hydrofluoric acid and fluorosulfonic acid, and water.

In WO '187, even though only sulfuric acid, hydrogen fluoride (i.e. hydrofluoric acid), and water are disclosed, not fluorosulfonic acid, however, since WO '187 discloses that the hydrogen fluoride is produced by reacting fluorspar and sulfuric, some fluorosulfonic acid may also be present in the mixture (note Applicants' specification, page 1, lines 22-29, which state that when fluorspar and acid are used to produce HF, an acid mixture is produced, which frequently comprises "a major proportion of sulfuric acid and minor proportions hydrofluoric acid and fluorosulfonic acid"). Furthermore, Applicants' claims do not require any particular amount for the fluorosulfonic acid, it can be present in the mixture in impurity amount.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the


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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
May 13, 2004